Having thus described the preferred embodiments, the invention is now claimed to be:

1. An air flow regulator including:

a damper; and

a pneumatic cylinder operatively connected with the damper to adjust a damper setting;

a pressure sensor that indicates a pneumatic pressure in the pneumatic cylinder; and

an air pressure regulator operatively connected with the pneumatic cylinder to pressurize or exhaust the pneumatic cylinder responsive to an electrical input indicative of a selected steady state pressure, the air pressure regulator including a calibration table associating steady state pneumatic cylinder pressure values with regulator shut-off pressure values, the calibration table being addressed by the electrical input indicative of an updated steady-state pneumatic cylinder pressure value and retrieving a corresponding shutoff pressure value at which the air pressure regulator ceases the pressurizing or exhausting such that the steady state pressure in the pneumatic cylinder settles at about the selected steady state pressure.

2. The air flow regulator as set forth in claim **1**, wherein the air pressure regulator includes:

a first valved connection between the pneumatic cylinder and a pressurized gas supply;

a second valved connection between the pneumatic cylinder and an exhaust pathway;

electrical circuitry for selectively configuring the first and second valved connections into a state selected from a group consisting of:

a pressurize state in which the first valve is open and the second valve is closed,

an exhaust state in which the second valve is open and the first valve is closed, and

an isolation state in which the first and second valves are both closed.

3. The air flow regulator as set forth in claim **2**, wherein the air pressure regulator includes:

a processor operatively connected to the first and second valved connections and the calibration table; and

a non-volatile memory storing control software, the processor executing the control software to responsive to the electrical input to change the steady-state pneumatic cylinder pressure value.

4. The air flow regulator as set forth in claim **1**, wherein the calibration table includes:

a pressurizing calibration table associating steady state pneumatic cylinder pressure values with regulator shut-off pressure values, the pressurizing calibration table being accessed responsive to the electrical input updating the steady state pneumatic cylinder pressure value to a higher pressure; and

an exhausting calibration table associating steady state pneumatic cylinder pressure values with regulator shut-off pressure values, the exhausting calibration table being accessed responsive to the electrical input updating the steady state pneumatic cylinder pressure value to a lower pressure.

5. A method for controlling a pneumatic cylinder which has a lag between termination of pressurization or evacuation and reading a steady state pressure, the method including:

receiving a desired steady-state pressure;

retrieving a shut-off pressure corresponding to the desired steady-state pressure, the shut-off pressure being different from the corresponding steady state pressure;

pressurizing or exhausting the pneumatic cylinder; and

terminating the pressurizing or exhausting when a measured pneumatic cylinder pressure corresponds to the shut-off pressure.

6. The method as set forth in claim **5**, wherein the retrieving of a shut-off pressure corresponding to the desired steady-state pressure includes:

retrieving the shut-off pressure from a calibration table that relates shut-off pressure values with steady-state pressure values.

7. The method as set forth in claim **6**, further including:

subsequent to the terminating, measuring a steady-state pneumatic cylinder pressure; and

updating the calibration table with the measured steady-state pressure.

8. The method as set forth in claim **6**, further including:

constructing the calibration table by:

(a) pressurizing or exhausting the pneumatic cylinder,

(b) terminating the pressurizing or exhausting when a measured pneumatic cylinder pressure corresponds to a selected shut-off pressure value,

(c) adding a correspondence of the selected shut-off pressure value and a steady state pneumatic cylinder pressure measured after the terminating to the calibration table, and

(d) repeating the pressurizing (a), the terminating (b), and the adding (c) for a plurality of selected shut-off pressure values.

9. The method as set forth in claim **8**, wherein the constructing of the calibration table further includes:

(i) performing the processes (a)-(d) for a plurality of successively increasing selected shut-off pressure values to construct a pressurizing calibration table; and

(ii) performing the processes (a)-(d) for a plurality of successively decreasing selected shut-off pressure values to construct an exhausting calibration table.

10. The method as set forth in claim **8**, wherein the retrieving of a shut-off pressure corresponding to the desired steady-state pressure includes:

interpolating shut-off pressure values corresponding to two steady state pneumatic cylinder pressure values of the calibration table that are closest to the desired steady-state pressure.

11. A storage medium encoding instructions executed by a computer or microprocessor to perform a control method for controlling an electropneumatic transducer, the control method including:

constructing a table associating steady state pressures with pressure regulator shutoff pressures;

receiving a steady-state pressure value;

retrieving a shutoff pressure corresponding to the steady state pressure from the table;

causing a pressure regulator to operate open loop on the electropneumatic transducer until a pressure feedback signal associated with the electropneumatic transducer reaches the retrieved shutoff pressure; and

upon the pressure feedback signal reaching the shutoff pressure, causing the pressure regulator to cease operating on the electropneumatic transducer.

12. The storage medium as set forth in claim **11**, wherein the process of causing the pressure regulator to operate open loop on the electropneumatic transducer includes:

selecting one of pressurizing and exhausting based on the shutoff pressure and the pressure feedback signal;

conditional upon selecting pressurizing, causing the pressure regulator to connect a pressurized air supply with the electropneumatic transducer; and

conditional upon selecting exhausting, causing the pressure regulator to connect an exhaust pathway with the electropneumatic transducer.

13. The storage medium as set forth in claim **12**, wherein the process of causing the pressure regulator to cease operating on the electropneumatic transducer includes:

disconnecting the pressurized air supply or the exhaust pathway from the electropneumatic transducer.

14. The storage medium as set forth in claim **11**, wherein the process of constructing a table associating steady state pressures with pressure regulator shutoff pressures includes:

(a) causing the pressure regulator to operate open loop on the electropneumatic transducer until the pressure feedback signal associated with the electropneumatic transducer reaches a first calibration shutoff pressure;

(b) upon the pressure feedback signal reaching the first calibration shutoff pressure, causing the pressure regulator to cease operating on the electropneumatic transducer;

(c) subsequent to causing the pressure regulator to cease operating, measuring a steady state pressure and recording the measured steady state pressure in the table as corresponding to the shutoff pressure; and

(d) repeating the processes (a), (b), and (c) for a plurality of calibration shutoff pressures.

15. The storage medium as set forth in claim **14**, wherein the process of constructing a table associating steady state pressures with pressure regulator shutoff pressures includes:

performing the processes (a), (b), (c), and (d) for a plurality of calibration shutoff pressures wherein the process (a) of causing the pressure regulator to operate open loop includes causing the pressure regulator to connect a pressurized air supply with the electropneumatic transducer; and

performing the processes (a), (b), (c), and (d) for a plurality of calibration shutoff pressures wherein the process (a) of causing the pressure regulator to operate open loop includes causing the pressure regulator to connect an exhaust pathway with the electropneumatic transducer.

16. The storage medium as set forth in claim **11**, wherein the process of constructing a table associating steady state pressures with pressure regulator shutoff pressures includes:

subsequent to causing the pressure regulator to cease operating on the electropneumatic transducer, recording a steady state pressure value corresponding to the pressure feedback signal.

17. The storage medium as set forth in claim **11**, wherein the receiving of a steady-state pressure value includes:

receiving a controlled process parameter value; and

transforming the received controlled process parameter value into a steady-state pressure value of the electropneumatic transducer corresponding to the received controlled process parameter value.

18. The storage medium as set forth in claim **11**, wherein the receiving of a steady-state pressure value includes receiving a steady state controlled process parameter value wherein the steady-state controlled process parameter value corresponds to a steady state pressure of the electropneumatic

transducer, and the retrieving of a shutoff pressure includes retrieving from the table a shutoff pressure corresponding to the received steady state controlled process parameter value.

19. A controller for controlling an electropneumatic transducer, the controller including:

an air pressure regulator having a first valve for selectively connecting and disconnecting a pressurized air supply and a second valve for selectively connecting and disconnecting an exhaust; and

configurable electronics configured to receive a steady state pressure, access a configured calibration to obtain a shut-off pressure associated with the received steady state pressure, cause a selected one of the first valve and the second valve to connect, and cause the selected one of the first valve and the second valve to disconnect responsive to an instantaneous pressure corresponding to the obtained shut-off pressure.

20. The controller as set forth in claim **19**, wherein the configurable electronics include:

a processor;

one or more non-volatile storage media that store software instructions and the configured calibration.

21. The controller as set forth in claim **19**, wherein the configured calibration includes:

a pressurizing calibration that associates a shut-off pressure with a corresponding steady state pressure that is obtained responsive to disconnecting the first valve when an instantaneous pressure of the electropneumatic transducer corresponds to the shut-off pressure; and

an exhausting calibration that associates a shut-off pressure with a corresponding steady state pressure that is obtained responsive to disconnecting the second valve when an

instantaneous pressure of the electropneumatic transducer corresponds to the shut-off pressure.

22. A method of regulating air flow in a duct system with a pneumatic cylinder controlled damper, the method including:

selecting an air flow;

converting the selected air flow into a corresponding steady state pneumatic cylinder pressure;

determining a corresponding shutoff pressure from which the pneumatic cylinder will settle at the corresponding steady state pressure;

changing pressure in the pneumatic cylinder until the shutoff pressure is reached; and

allowing the pneumatic cylinder to settle from the shutoff pressure to the steady state pressure corresponding to the selected flow rate.